

AMENDMENTS TO THE SPECIFICATION

[0004] Figure 1B illustrates a flip chip molded matrix array package (FC-MMAP). The package substrate 30 includes a semiconductor die 32 and a package substrate 34. The semiconductor die 32 is connected with the package ~~substrate 24~~substrate 34 through solder bumps 36, which may be controlled collapse chip connection (C4) or other conductive bumps. The solder bumps 36 are formed on pads on the active or device side of the semiconductor die 32 before the semiconductor die 32 is mounted on the package substrate 34. The C4 bumps 36 are conductive so that the device side of the semiconductor die 32 can communicate with the package substrate 34. The signals that are traveling to and from the semiconductor die 32 are routed through the package substrate 34 and out of the package using the interconnects 38. The interconnect devices 38 may be solder balls or metal filled polymers, such as BGA interconnects, PGA interconnects, etc. The die 32 is encapsulated in a molding material 40, such as an epoxy, to prevent damage.

[0031] Interconnect devices 110 are coupled with the through vias 108 to create an electrical connection with a backside package ~~substrate 110~~substrate 112. The backside package substrate 112 is added to increase the number of conductive lines available to deliver power to the die 102 and to transport signals to and from the die 102. Interconnect devices 114 are also formed on the device side 104 of the package substrate 102 to allow for connection between the device side 104 of the semiconductor die 102 and the frontside package substrate 116. The interconnect devices 110 and 114 may be, flip chip solder bumps such as Controlled Collapse Chip Connect (C4) or other interconnects. The interconnect devices 110 and 114 may be formed by stencil printing, electroplating, stud bumping, or other well known techniques.